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PROTECTION OF THE QUALITY AND SUPPLY OF FRESHWATER RESOURCES: APPLICATION OF INTEGRATED APPROACHES TO THE DEVELOPMENT, MANAGEMENT AND USE OF WATER RESOURCES

Options for Agenda 21

Report of the Secretary-General of the Conference

I. INTRODUCTION

1. Effectively integrated management of water resources is important to all socio-economic sectors relying on water. Rational allocation prevents conflict and enhances the social development of local communities as well as economic planning and productivity. Efficient demand management allows water-using sectors to make long-term savings on water costs and stimulates resource-conscious production technologies. Health conditions and environmental quality should also improve either resulting from integrated development planning or as a beneficial consequence of improved environmental or social conditions.

2. The present report is based upon a review of progress in the implementation of the Mar del Plata Action Plan and resulting strategies for the 1990s. Organizations represented at the Intersecretariat Group for Water Resources of the United Nations Administrative Committee on Coordination (ACC) collaborated in this process.

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Linkages to other Environmental and Developmental Issues

3. Water is a finite resource, essential for the sustenance of life on earth. Virtually all the environmental issues listed in the United Nations General Assembly resolution 44/228 are directly or indirectly linked to freshwater issues. With increase in economic activities, and more exploitation of major ecosystems and natural resource stocks, the study of linkages between freshwater issues and other sectoral and cross-sectoral issues is becoming increasingly important. Socio-economic pursuit - including urbanization, industrial production and agricultural activities - has reached a stage where freshwater issues have often become the limiting factor for sustainable development. Freshwaters - rivers, reservoirs, lakes and ground waters - are in contact with other ecosystems and are used in a variety of human activities, many of which would not be possible without a freshwater supply of adequate quality and quantity.

4. Poor land-use planning, including deforestation, through agricultural development, mining and urbanization, could lead to a considerable increase in erosion problems and related soil loss in the river basins. The sedimentation in large reservoirs may have serious adverse effects downstream by reducing the quantity of natural nutrients available to agricultural land or to coastal waters. The loss of nutrients can lead to increased fertilizer use and decreases in coastal fishery yields. Acidification of surface and some ground waters due to atmospheric deposition of air pollutants can lead to depletion of freshwater living resources, contributing to the loss of biodiversity. Construction of dams for hydropower and irrigation, water channelization, over-abstraction from aquifers, use of water bodies as open sewers for discharge of both domestic and industrial wastes can lead to salinization of rivers, lakes, and soils, salt intrusions in coastal aquifers, and serious water pollution problems. Should a global warming occur as a result of climate change it is likely to affect the world's freshwater resources through changes in the hydrological cycle, resulting in the decrease of soil moisture and annual river runoff in many areas of the Northern Hemisphere.

5. Water-related diseases are still a major health problem, especially in the developing countries. Diseases caused by microbiological pollution of water supplies or transmitted by water-associated vectors, and those related to inadequate sanitation and absence of clean water, are widespread. With water use per capita expected to increase significantly in developing countries with high economic or population growth rates, the volume of waste requiring treatment is expected to present a growing problem. To ignore the interactions and linkages between freshwater issues and other sectoral issues could result in severe social, economic or human health consequences.

II. OPTIONS FOR AGENDA 21

PROGRAMME AREAS

6. In accordance with this review, the following six components were developed for the freshwater sector:

- Water Resources Assessment

- Protection of Water Quality

- Drinking Water Supply and Sanitation

- Water and Sustainable Urban Development

- Water for Sustainable Agricultural Development

- Integrated Water Resources Management

Each component is presented in this document in a format which covers the basis for action, objectives, and programme activities.

7. The action programmes described hereunder are mostly addressed to the national governments although many of the proposed programme activities have to be implemented at the local level. In addition, the external support agencies are expected to play an important role in the facilitation of the necessary national action plans.

8. Decision 2/20 of the Preparatory Committee of the United Nations Conference on Environment and Development requested the Secretary-General of the Conference to submit to the Preparatory Committee at its third session a report identifying the main elements of an action programme, including an implementation plan, which should be reviewed for use as a basis for Agenda 21. Options for action are presented hereunder whereas implementation mechanisms will be identified by the Dublin Conference on Water and the Environment.

A. WATER RESOURCES ASSESSMENT

Basis for action

9. Water resources assessment (WRA) is the continuing determination of sources, extent, dependability, and quality of water resources. It is the practical basis for their sustainable management and a prerequisite for evaluation of the possibilities for this development. There is, however, growing concern that at a time when more precise and reliable information is needed about water resources, hydrological services and related bodies are less able to provide this information, especially information on ground water and water quality. Major impediments are: the lack of financial resources for WRA, the fragmented nature of hydrological services and the insufficient numbers of qualified staff. At the same time the advancing technology for data capture and management is increasingly difficult to apply for developing countries. Establishment of national data bases is, however, vital to WRA and for mitigating floods and pollution.

Objectives

10. Based upon the Mar del Plata Action Plan, this programme area is extended into the 1990s and beyond with the overall objective:

> "To ensure the assessment and forecasting of the quantity and quality of water resources, in order to meet the needs of all sectors of society, to enable mitigation of water-related hazards, and to maintain or enhance the condition of the global environment."

Four specific objectives are set accordingly as follows:

a. to have all countries allocate to water resource assessment the financial resources which are justified by the economic and social value of information about their water resources;

b. to have all countries establish the institutional arrangements needed to ensure the efficient collection, processing, storage, retrieval and dissemination to users of information about the quality and quantity of available water resources in an integrated manner;

c. to make available to all countries water resource assessment technology which is appropriate to their needs, irrespective of their level of development;

d. to have sufficient numbers of appropriately qualified and capable staff recruited and retained by water resource assessment agencies, and provided with the training and retraining they need to carry out their responsibilities successfully.

11. Quantitative programme targets can be set for the number of countries covered with adequate services:

a. by the year 2000 there should be water resources assessment installed in 70 countries with high capability of services, and 60 countries with medium capability of services;

b. by the year 2025 there should be 110 countries with high capability of services, and 40 countries with medium capability of services;

c. the longer-term target is to have high capabilities of services available in all countries.

Activities

12. Governments, with the assistance of relevant UN agencies, regional and international organizations and donor agencies, and through bilateral and multilateral agreements, could undertake the following activities:

13. a. increasing financial resources for WRA

- securing augmented budgetary allocations
- exploring novel ways of funding
- estimating the economic and social value of water resources data to justify the investment in WRA.

b. improving institutional arrangements

- facilitating close collaboration between water sector agencies, particularly between information producers and users

- reviewing the legislative and regulatory basis of WRA

- preparing catalogues of the water resources information held by government services, private sector, educational institutes, consultants and others.

c. upgrading and increasing technology transfer

- encouraging international organizations and donors to meet the real needs of the country

- developing strategies for meeting requirements over the medium and long term.

d. capacity building for WRA

- encouraging the provision of attractive terms of employment and career paths for professional and technical staff

- monitoring human resources needs and meeting them through education and training opportunities, and international programmes of courses and conferences.

B. PROTECTION OF WATER QUALITY

Basis for action

14. There are few regions of the world that are still exempt from problems of degraded water quality and the pollution of surface and groundwater sources. The problem most affecting water quality in developing countries is the discharge of domestic sewage. In the rural areas, concern about the entry of fertilizers and pesticides into watercourses and groundwater aquifers is increasing. Aquatic ecosystems are disturbed and the living freshwater resources are threatened. Aquatic ecosystems are also affected by major water resource development projects such as large dams, river diversions and irrigation schemes. Land degradation and deforestation have led to increased erosion and sedimentation. Ecological and human health effects are the measurable consequences, although the means to monitor them are grossly inadequate or non-existent in many developing countries.

Objectives

15. Already the Mar del Plata Action Plan recognized the intrinsic linkage between water resource development projects and their important repercussions of a physical, chemical, biological and socio-economic nature. The overall environmental health objective was set:

> "to evaluate the consequences which the various users of water have on the environment, to support measures aimed at controlling water-related diseases, and to protect ecosystems".

16. Two objectives will have to be pursued concurrently to integrate water quality aspects into water resource management:

a. maintenance of ecosystem integrity/a management principle to preserve aquatic ecosystems, including the living resources, and to protect them effectively from direct and indirect pollution;

b. public health protection/a task requiring not only the provision of pathogen-free drinking water but also the control of disease vectors in the aquatic environment.

17. Two targets have been set to integrate water quality aspects into water resource managment:

a. by the year 2000 all newly industrializing countries should have effective water pollution control programmes in operation, commensurate with their socio-economic development;

b. by the year 2000 all countries should participate, as far as appropriate, in inter-country and international water quality monitoring and management programs such as the Global Water Quality Monitoring Programme GEMS/WATER, UNEP's Environmentally Sound Management of Inland Waters, FAO's regional inland fishery bodies, or the RAMSAR convention on wetlands;

c. by the year 2025 the prevalence of water-associated diseases should be drastically reduced, starting with the eradication of dracunculosis (Guinea worm) by the year 1995 and onchocerciasis (river blindness) by the year 2000.

Activities

18. All national governments, especially of developing countries, with the assistance of appropriate UN agencies and other international organizations, and in cooperation with the industrialised countries could embark upon the following activities:

a. application of clean technology

- control of industrial waste discharges, including low-waste production technologies and water recirculation

- treatment and safe reuse of waste-water in agriculture and aquaculture.

b. diffuse pollution source control

- rational land use to prevent land degradation, erosion and siltation

- controlled use of agrochemicals to prevent eutrophication and chemical contamination of ground waters.

c. water pollution control measures

- application of polluter pays principle to all kinds of sources
- introduction of precautionary principle in water quality management
- request for environmental impact assessment on all major water resource development projects.

d. legal instruments for water quality protection

- monitoring and control of transboundary pollution in shared water resources
- control of long-range atmospheric transport of pollutants
- control of accidental spills in international water bodies

e. capacity building for water quality management

- establishment of institutional framework at national and local levels
- development of technical infrastructure for water quality monitoring, assessment and control
- enhancement of staff capabilities at technical and managerial levels.

C. DRINKING WATER SUPPLY AND SANITATION

Basis for action

19. Safe water supplies and environmental sanitation are vital for protecting the environment, improving health and alleviating poverty. An estimated 80 per cent of all diseases and over one third of deaths in developing countries are caused through the consumption of contaminated water and on average as much as one tenth of each person's productive time is sacrificed to water-related diseases. Concerted efforts during the 1980s brought water and sanitation services to hundreds of millions of the world's poorest people. The most outstanding of these efforts is the launching in 1981 of the United Nations International Drinking Water Supply and Sanitation Decade (IDWSS) which resulted from the Mar del Plata Action Plan adopted by the United Nations Water Conference in 1977. The objective of the IDWSS was to provide safe drinking water and sanitation to underserved urban and rural areas by 1990. But even this unprecedented progress was not enough. One in three people in the developing world still lacks these two most basic requirements for health and dignity.

Objectives

20. The New Delhi Statement formalized the need to provide, on a sustainable basis, access to safe water in sufficient quantities and proper sanitation for all, requesting "some for all rather than more for some". Four Guiding Principles provide for the programme objectives:

a. protection of the environment and safeguarding of health through the integrated management of water resources and liquid and solid wastes;

b. institutional reforms promoting an integrated approach and including changes in procedures, attitudes and behaviour, and the full participation of women at all levels in sector institutions;

c. community management of services, backed by measures to strengthen local institutions in implementing and sustaining water and sanitation programmes;

d. sound financial practices, achieved through better management of existing assets, and widespread use of appropriate technologies.

21. Past experience has shown that specific targets should be set by each individual country. At the Summit for Children in 1990, 71 heads of state or government called for both universal access to water supply and sanitation and the eradication of guinea worm disease by 1995. Even for the more realistic target to achieve full coverage in water supply by 2025, it is estimated that annual investments must reach double current levels. The only realistic strategy to meeting present and future needs, therefore, is to develop lower cost services that can be implemented and sustained at the community level.

Activities

22. All national governments, especially of developing countries, with the assistance of appropriate UN agencies and other international organizations, and in cooperation with the industrialised countries could embark upon the following activities:

a. the environment and health

- sanitary disposal of excreta and sewage
- expansion of urban water supply, sewage and drainage systems
- control of water-associated diseases
- treatment and reuse of domestic wastewaters

b. people and institutions

- changing the role of government towards decentralization, local authorities, private enterprises and NGOs
- human resources development at all levels, including special programmes for women
- broad-based education programmes, with particular emphasis on hygiene and local management

c. community management

- support to communities in owning and control of their own systems on a sustainable basis

- encouragement of women in water management

- linkages between national water plans and community management of local waters

d. finance and technology

- making service-agencies more cost-effective and responsive to consumer needs

- restructuring the utilization of funds with more attention to underserved rural and low-income urban areas

- rehabilitation of defective systems, reduction of wastage and reuse of water and wastewater

- programmes for operation and maintenance on the basis of cost recovery and charging mechanisms

- research and development of appropriate technical solutions.

D. WATER AND SUSTAINABLE URBAN DEVELOPMENT

Basis for action

23. Early in the next century, more than half of the world's population will be living in urban areas. By 2025 that proportion will have risen to 60%, some 5 billion people. Rapid urban population growth and industrialization are putting severe strains on the water resources and environmental protection capabilities of many cities. Scarcity of freshwater resources and the escalating costs of developing new resources have a considerable impact on national industrial development and economic growth. Better management of urban water resources can make a substantial contribution to the alleviation of poverty and improvement of the health and quality of life of the urban poor. A high proportion of urban agglomerations are located on estuaries and in coastal zones. The resulting pollution from municipal and industrial discharges combined with overexploitation of available water resources contaminates the marine environment and threatens future supplies.

Objectives

24. The development objective of this programme is to support local and central governments' efforts and capacities to sustain national development and productivity through environmentally sound management of water resources for urban use. Supporting this objective is the identification and implementation of strategies and actions to ensure the continued supply of affordable water for present and future needs, and to reverse current trends of resource degradation and depletion.

25. The following targets have been set:

By the year 2000:

a. All urban residents have access to at least 40 litres per capita and day of safe water and 75% are provided with acceptable means of sanitation.

b. All countries establish and apply quantitative and qualitative discharge standards for municipal and industrial effluents.

c. 75% of solid waste generated in urban areas is collected and disposed of in an environmentally safe way.

By the year 2025:

e. All countries have established biological and chemical quality criteria for all water bodies (surface and groundwater).

f. Biological and chemical quality of water bodies is demonstrating steady improvement.

Activities

26. Countries, through regional and international cooperation, and with the support of NGOs and the private sector, could undertake the following activities:

a. protection of water resources from depletion and degradation

- introduction of sanitary waste disposal facilities based on low-cost upgradable technologies
- implementation of urban storm water runoff and drainage programmes
- promotion of recycling and reuse of waste-water and solid wastes.

b. efficient and equitable allocation of water resources

- reconciliation of city development planning with the availability and sustainability of water resources
- introduction of water tariffs which reflect the marginal and opportunity cost of water
- initiation of public awareness campaigns to promote conservation and reuse.

c. institutional(legal)management reforms

- adoption of a city-wide approach to the management of water resources

- incorporation into municipal agencies plans of land and water management, housing and other urban development programmes

- utilization of the skills and potential of non-governmental organizations and the private sector

d. support to local capacity building

- promotion of investments in urban water and waste management reflecting the major contribution of cities to national economic development

- provision of seed money and technical support to the local handling of materials supply and services

- encouragement of autonomy and financial viability of city water and sewerage utilities

- creation and maintenance of a cadre of professionals and semi-professionals for water, wastewater and solid waste management.

E. WATER FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT

Basis for action

27. Sustainability of agricultural production will increasingly depend on sound and efficient water use and conservation practices consisting primarily of irrigation development and management including water management in rainfed areas, inland fisheries and agro-forestry. While significant expansion of the area under rainfed agriculture has been achieved during the past decade, the productivity response and sustainability of irrigation systems have been constrained by problems of water-logging and salinization. Soil erosion in the upper watersheds, mismanagement and over-exploitation of the natural resources in the drought-prone areas and acute competition for water, have all influenced the extent of poverty, hunger and famine in the developing nations.

Objectives

28. An International Action Programme on Water and Sustainable Agricultural Development (IAP-WASAD) has been initiated by FAO in cooperation with other international organizations. The main objective of the IAP-WASAD is to assist developing countries in planning, developing and managing water resources on an integrated basis to meet the present and future needs for agricultural production.

29. The IAP-WASAD has developed a framework for sustainable water use in the agricultural sector and identified priority areas for action at national, regional and global levels. Quantitative targets for new irrigation development, improvement of existing irrigation schemes and reclamation of waterlogged and salinized lands through drainage for 94 developing countries are estimated on the basis of food requirements, agro-climatic zones and availability of water and land.

30. The following projections are given:

By the year 2000:

a. 21 million hectares of new irrigation development

b. 17 million hectares of improvement/modernization of existing schemes

c. 10 million hectares installed with drainage and water control facilities

d. 15 million hectares of small-scale irrigation water programmes and conservation.

Activities

31. Countries, especially developing countries, with the cooperation of the private sector and NGOs, could undertake the following activities to protect their water resources from depletion and degradation:

a. water use efficiency

- increase of efficiency in agricultural water use for better utilization of limited water resources

- strengthening of water and soil management research under irrigation and rainfed conditions

- monitoring and evaluation of irrigation project performance

b. waterlogging, salinity control and drainage

- introduction of surface drainage in rainfed agriculture to prevent temporary waterlogging and flooding of lowlands

- introduction of artificial drainage in irrigated agriculture

- encouragement of conjunctive use of surface and groundwaters, including monitoring and water balance studies

c. water quality management

- establishment and operation of cost-effective water quality monitoring systems for agricultural water uses

- prevention of adverse effects of agricultural activities on water quality for other uses

d. small-scale water programmes

- development of small-scale irrigation, water supply for humans and livestock and for water and soil conservation

- promotion of local initiatives for the integrated development and management of water resources

- provision of adequate technical advice and support and enhancement of institutional collaboration at the local community level

e. scarce water resources management

- development of long-term strategies and practical implementation programmes for agricultural water use under scarcity conditions with competing demands for water

- formulation of specialized programmes focused on drought preparedness with emphasis on food scarcity, environmental safeguards and community resilience

f. supporting capacity building

- development of adequate data bases and adaptive research

- institutional strengthening based upon human resources development at all levels

- transfer of existing water use technologies and support of their field application.

F. INTEGRATED WATER RESOURCES MANAGEMENT

Basis for action

32. The extent to which water resources development contributes to economic productivity and social well being is not usually appreciated although all social and economic activities rely heavily on the supply and quality of fresh water. As populations and economic activities grow many countries are rapidly reaching conditions of water scarcity or face limits to economic development. Water demands are increasing rapidly, with 70-80% for irrigation, less than 20% for industry and a mere 6% for domestic consumption. The holistic management of water as a finite and vulnerable resource, and the integration of sectoral water plans and programmes within the framework of national economic and social policy is of paramount importance for action in the 1990s and beyond. The fragmentation of responsibilities for water resources development among sectoral agencies is proving, however, to be an even greater impediment to promoting integrated water management than had been anticipated.

Objectives

33. Integrated water resources management is based on water as a natural resource and an economic good. In developing and using water resources, priority has to be given to the satisfaction of basic needs. Beyond basic needs, however, water users should be charged its true marginal costs.

34. Integrated water resources management should follow four principal objectives:

a. to promote a dynamic, interactive, iterative and multisectoral approach to water resources management which integrates technological, economic, environmental and social considerations

b. to plan the rational utilization, conservation and management of water resources based on community needs and priorities and within the framework of national economic development policy

c. to design, implement and evaluate projects and programmes which are both economically efficient and socially appropriate within clearly defined strategies, based on a full public participatory approach

d. to develop the appropriate institutional, legal and financial mechanisms to ensure that water resources development is a catalyst for sustainable social progress and economic growth.

35. The strengthening of national capacities to manage the resource and the role of government in creating the enabling environment for efficient and equitable utilization of the resource are crucial. In the case of transboundary water resources there is an even greater need to formulate and harmonize water resources strategies and action programmes.

36. Although difficult to measure success in this area, quantitative targets could realistically be set as follows:

By the year 2000:

a. all developing countries will have designed and initiated costed and targeted national action programmes, and 75% of all countries will have appropriate institutional and legal structures in place.

By the year 2025:

b. subsectoral programme targets reached.

Activities

37. Countries, especially developing countries, with the assistance of relevant UN bodies and international donors, could implement the following activities to improve integrated water resources management in their countries:

a. development of interactive databases, forecasting methods and economic planning models

b. optimisation of water resources allocation under physical and socio-economic constraints

c. formulation of costed and targeted national action plans and investment programmes

d. capacity building, including the rationalization and strengthening of institutional and legal structures and the development of the necessary human resources basis

e. Implementation of allocation decisions through demand management, pricing mechanisms and regulatory measures

f. flood and drought management using risk analysis and social impact assessment

g. development of public participatory techniques and their implementation in decision making

h. enhancement of the role of women in water resources planning and management.

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ENVIRONMENTALLY SOUND MANAGEMENT OF TOXIC CHEMICALS: OPTIONS FOR AGENDA 21

Report of the Secretary-General of the Conference

I. INTRODUCTION

1. This paper was prepared by the Secretariat in response to the decision No. 2/17 of the Preparatory Committee at its second session in which the Secretary General of the Conference was requested "... to elaborate for its third session, the potential areas for action proposed in the progress report, A/CONF.151/PC/35, which would form the framework for an international strategy for environmentally sound management of toxic chemicals" and, in doing so, to take into account a series of specific issues as listed in paragraph 2 of the decision.

2. As already elaborated upon in the background paper (A/CONF.151/PC/74) "Environmentally Sound Management of Toxic Chemicals" is related to many other sectors being dealt with in the UNCED preparatory process such as human health, agriculture, oceans, freshwater, atmosphere, land resources, biodiversity and hazardous wastes.

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3. A substantial use of chemicals is essential to meet the social and economic goals of the world community and today's best practice demonstrates that they can be widely used, cost effectively, and with a high degree of safety. However, a great deal remains to be done to extend the environmentally sound management of toxic chemicals, to undo the mistakes of the past, and to harness the carefully chosen use of chemicals to the causes of sustainable development and an improved quality of life in every country and every community across the globe. One of the major problems to tackle is the lack of sufficient scientific information for the assessment of risks of a great number of chemicals. Another problem is the lack of resources to assess chemicals for which data are at hand.

4. Other problems are related to the fact that the introduction of chemicals and of chemically-related industries in developing countries, which as yet lack the infrastructure and trained human resources for chemical safety, is often carried out on a far from environmentally-sound basis.

5. Gross chemical contamination, with grave damage to human health and the environment, has continued in recent times in some of the world's most important industrial areas. Restoration will require major investments and development of new techniques. The importance of long-range transport of pollution, with effects which can extend even to the fundamental chemical and physical processes of the Earth's atmosphere and climate, is only recently becoming understood.

6. A considerable number of international bodies are involved in work on chemical safety. In many countries work-programmes for the promotion of chemical safety are in place. Such work has international implications as chemical risks do not respect national boundaries. However, a significant strengthening of both national and international efforts is needed in order to achieve an environmentally sound management of chemicals.

7. At its Second Session the Preparatory Committee for UNCED invited WHO, UNEP and ILO, within the framework of the International Programme on Chemical Safety (IPCS), in co-operation with FAO and other relevant organizations, to report on ongoing work carried out through appropriate government expert meetings concerning possible proposals for an intergovernmental mechanism for chemical risk assessment and management.

8. Moreover, the Governing Council of UNEP, at its 16th Session, requested the Executive Director to prepare, in co-operation with the Secretariat of UNCED, WHO, ILO, OECD, EEC and other relevant organizations, draft proposals for an intergovernmental mechanism for risk assessment and management of chemicals. In addition, the Governing Council requested the Executive Director, subject to the availability of resources, to convene in consultation with the executive heads of ILO and WHO, within the context of the collaboration under IPCS, and in co-operation with OECD, CEC, the Secretary-General of UNCED and other relevant international organizations, a meeting of government-designated experts to consider the draft proposals and, in consultation with the executive heads of ILO and WHO and through the appropriate channels, to submit to the Preparatory Committee for UNCED at its fourth Session a report on the outcome of the meeting. The government-designated experts meeting is expected to be held in December 1991.

9. The following proposals for programmes for improving assessment and management of chemical risks represent urgent needs irrespective of the establishment of an intergovernmental mechanism for chemical risk assessment and management. Such a mechanism could increase the possibility of cost-effective solutions.

II. OPTIONS FOR AGENDA 21

OVERALL OBJECTIVES

10. Beneficial use of chemicals for sustainable development with minimum risks to health and the environment.

11. Adoption of strategies for environmentally sound management of chemicals in each country not later than the year 2000 with implementation as soon as possible thereafter.

PROPOSED PROGRAMME AREAS

12. The following major programme areas are proposed as options for consideration by the Preparatory Committee.

a. Expanding and accelerating the international assessment of chemical risks.

b. Harmonization of classification and labelling of chemicals

c. Information exchange on toxic chemicals

d. Establishment of risk reduction programmes

e. Strengthening of national capabilities and capacities for management of chemicals

There is a close interrelationship between the programme areas. For example, assessment of chemical risks is essential to information exchange and risk reduction.

A. EXPANDING AND ACCELERATING THE INTERNATIONAL ASSESSMENTAOFRISKS

Basis for Action

13. The assessment of risks to human health and environment that a chemical may cause is a prerequisite to planning for its safe and beneficial use. Out of the approximately 100,000 chemical substances in commerce and the thousands substances of natural origin which human beings come into contact, many substances appear as pollutants and contaminants in food, commercial products and the various environmental media. Fortunately the exposure to most chemicals is rather limited as most are used in very small amounts. Some 1500 chemicals cover over 95 per cent of the total world production. But a serious problem is that even for a great number of high volume production chemicals, crucial data for risk assessment are often lacking.

14. Risk assessment is resource-intensive. it could be made cost-effective by strengthening international co-operation and better coordination, thereby making best use of available resources and avoiding unnecessary duplication of efforts.

Objective

15. Strengthening of international risk assessment. About 500 priority chemicals or groups of chemicals, including major pollutants and contaminants of global significance, could have been assessed by the year 2000 using current selection and assessment criteria.

Activities

16. Relevant international organizations with active participation of governments and industry could:

- Strengthen and expand programmes on chemical risk assessment within the United Nations system (IPCS: UNEP, ILO, WHO), based on agreed approach to data quality, assurance, application of assessment criteria, peer review and linkages to risk management activities.

- Produce guidelines for acceptable exposure for a greater number of substances, based on peer review and scientific consensus.

- Review strategies for assessment of exposure and environmental monitoring to allow for the best use of available resources, to ensure compatibility of data and to encourage coherent national and international strategies for exposure assessment.

- Promote mechanisms to increase collaboration amongst government, industry, academia and relevant NGOs, involved in the various aspects of risk assessment of chemicals and related processes, in particular promoting and coordinating research activities to improve understanding of the mechanisms of action of toxic chemicals.

- Improve methods for assessment of chemicals and improve procedures for using toxicological and epidemiological data to predict the effects of chemicals on human health and the environment, in order to enable decision makers to adopt adequate policies and measures to reduce hazards posed by chemicals.

- Develop criteria for priority-setting of chemicals of global concern for assessment.

- Validate alternative methods to those using test animals, thus reducing the use of animals for testing purposes.

- Promote relevant epidemiological studies with a view to establishing a cause-effect relationship between exposure to chemicals and the occurrence of certain diseases.

- Generate data necessary for assessment with the active participation of industry.

B. HARMONIZATION OF CLASSIFICATION AND LABELLING OF CHEMICALS

Basis for Action

17. Adequate labelling of chemicals, based on assessed risks to health and environment, is the simplest and most efficient way of indicating how to handle and use chemicals safely.

18. For the safe transport of dangerous goods, including chemicals, a comprehensive scheme elaborated within the UN system is in current use. This scheme takes mainly into account the acute hazards of chemicals.

19. Globally harmonized classification and labelling systems are not yet available to promote the safe use of chemicals at the workplace, in the home,etc. Classification of chemicals can be made for different purposes and is a particularly important tool in establishing labelling systems.

20. The International Labour Conference has given ILO a mandate to undertake, within the framework of IPCS and in consultation with other concerned bodies, the process of harmonizing existing classification systems.

Objective

21. A globally harmonized classification and labelling system including easily understandable symbols should be in place by the year 2000.

Activities

22. International bodies active in the chemical safety area could establish a coordinating group to:

- Make comparative studies of existing classification and labelling systems as a starting point for establishing general principles for a globally harmonized system.

- draft proposals for standardization of hazard communication terminology and symbols in order to enhance risk management of chemicals, facilitate international trade and make it easier to translate the information into the end user's language.

- elaborate a harmonized classification and labelling system.

23. Governments and relevant international organizations could:

- Finalize and establish a harmonized classification and labelling system.

C. INFORMATION EXCHANGE ON TOXIC CHEMICALS

Basis for action

24. The London guidelines are addressed to governments with a view to assisting them in the process of increasing chemical safety in all countries through the exchange of information on chemicals.

25. The export to developing countries of chemicals which have been banned in one or more countries or whose use has been severely restricted in some industrialized countries has been the subject of concern as some importing countries lack the ability to assure safe use, due to inadequate government infrastructure for controlling the availability, storage, formulation and disposal of chemicals.

26. In order to address this issue provisions for Prior Informed Concent (PIC) procedures were introduced in 1989 in the " London Guidelines for the exchange of information on chemicals in International Trade" (UNEP/IRPTC) and in the "International Code of Conduct on the Distribution and Use of Pesticides" (FAO). In addition a joint FAO/UNEP programme has been launched for the operation of the PIC procedures for chemicals including the selection of chemicals to be included in the PIC procedure and preparation of PIC decision guidance documents. The ILO chemicals convention calls for communication between exporting and importing countries when hazardous chemicals have been prohibited for reasons of safety and health at work.

Objective

27. Intensified exchange of information on chemical safety between all involved parties

28. Full implementation of the Prior Informed Consent procedure contained in the amended London Guidelines and in the FAO International Code of Conduct by the year 2000.

Activities

29. Governments of countries exporting chemicals could:

- provide knowledge and information on restricted or banned chemicals to importing countries to enable them to judge and take decisions on whether to import and how to handle these chemicals and establish joint responsibilities in trade of chemicals between importing and exporting countries.

- Provide technical assistance and information to other countries, especially those with shortages of technical expertise, including training in the interpretation of relevant technical data, e.g. data provided through the FAO/UNEP joint programme on PIC (Decision Guidance Documents) and those submitted by industry or by other sources.

D. ESTABLISHMENT OF RISK REDUCTION PROGRAMMES

Basis for Action

30. There are often alternatives to hazardous chemicals currently in use. Thus risk reduction can sometimes be achieved by using other chemicals or even non-chemical methods. The classical example of risk reduction is the substitution of harmless or less harmful substances for harmful ones. Setting

standards for chemicals in each environmental media, food, consumer goods, etc, is another example of risk reduction. In a wider context risk reduction involves international approaches to reduce the risks of selected chemicals taking into account the entire life cycle of the chemicals. Such approaches could encompass both regulatory and non-regulatory measures including, inter alia, the promotion of the use of cleaner products and technologies, product labelling, use limitations, and the phasing out or banning of chemicals.

31. In the agricultural area, integrated pest management is one way of risk reduction.

32. Other areas of risk reduction encompass the prevention of chemical accidents, prevention of poisoning by chemicals and the undertaking of toxicovigilance.

Objective

33. To reduce risks posed by chemicals by using alternative chemicals and methods and taking precautionary measures.

Activities

34. Governments could:

- Adopt policies and legal frameworks and procedures to identify and minimize the use of the most hazardous chemicals, in particular those included in the PIC list.

- Carry out national reviews of earlier accepted pesticides and reviews of the possible substitution of other pest-control methods, particularly for pesticides which are toxic-persistent and/or bio-accumulative.

- Encourage national and regional work to harmonize evaluation of pesticides.

- Increase efforts to identify national needs for standard setting and implementation in the context of the FAO/WHO Codes Alimentarius in order to minimize adverse effects of chemicals in food.

- Develop national policies and adopt the necessary regulatory framework for prevention of accidents (land use, planning, permit systems, reporting requirements on accidents, etc.)

- Provide assistance in the development of chemical risk communication guidelines at the national level to promote information exchange with the public.

35. International organizations could:

- Formalize networks of emergency response centres.

- Promote technology that would minimize the use of hazardous chemicals and processes in all countries.

E. STRENGTHENING OF NATIONAL CAPABILITIES AND CAPACITIES FOR MANAGEMENT OF CHEMICALS

Basis for Action

36. Many countries lack national systems to cope with chemical risks. In several countries with systems in place there is an urgent need to make the systems more efficient.

37. Basic elements for national sound management of chemicals are: (i) adequate legislation; (ii) information gathering and dissemination; (iii) capacity for risk assessment and interpretation; (iv) establishment of risk management policy; (v) capacity for implementation and enforcement; (vi) capacity for rehabilitation of contaminated sites and poisened persons.

38. As management of chemicals takes place within a number of sectors, related to various national ministries, experience suggests that an interministerial coordinating mechanism is essential.

Objective

39. National systems for environmentally sound management of chemicals including legislation and provisions for implementation and enforcement should be in place in all countries by the year 2000.

Activities

40. International organizations could:

- prepare guidelines with advice and check lists for enacting legislation in the chemical safety field.

- Support developing countries to develop national legislation.

41. Governments could:

- Establish an interministerial coordinating mechanism, presided over by a senior member of the government, to provide liaison between all parties involved in chemical safety activities (e.g. agriculture, education, industry, labour, health, transportation, police, civil defense, economic affairs, research institutions, poison control centres).

- Direct information campaigns to the general public to increase the awareness of problems on chemical risks.

- Develop networks of emergency response centres, including poison control centres.

- Develop national and local capabilities to respond to accidents by use of the APELL programme and regularly tested and updated emergency plans.

- Organize training programmes regarding emergency response targeted at all levels of various constituencies.

- In cooperation with industry develop emergency response procedures, identifying necessary means and equipment in industries and plants to minimize impacts of accidents.

42. International organizations could:

- Arrange training courses to educate staff for work on chemical safety at all levels.

- Develop mechanisms to make maximum use in countries of internationally available information.

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ENVIRONMENTALLY SOUND MANAGEMENT OF HAZARDOUS WASTE: OPTIONS FOR AGENDA 21

Report of the Secretary-General of the Conference

I. INTRODUCTION

1. This paper was prepared by the Secretariat in response to decision number 2/14 of the Preparatory Committee at its second session, in which the Secretary-General of the Conference was requested to elaborate further on the proposed areas for action identified in the progress report on "Environmentally sound management of hazardous waste" (ref. document A/CONF.151/PC/34) "... and report thereon to the Preparatory Committee at its third session".

2. The background paper on the "Environmentally sound management of hazardous waste" (A/CONF.151/PC/75) describes the principal issues related to hazardous waste management and attempts to identify constraints and gaps in knowledge. It reviews, current approaches and activities and provides the basis for the options for action in the present Agenda 21 paper.

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II. OPTIONS FOR AGENDA 21

OVERALL OBJECTIVE

3. Within the "cradle to grave" framework, minimize the generation of hazardous wastes and close the hazardous waste cycle.

OVERALL TARGETS

4. (a) Minimization of the generation of hazardous wastes by reduction of the transboundary movements of hazardous wastes to a minimum consistent with the environmentally sound management of those wastes, and self-sufficiency in waste disposal.

(b) Ratification of the Basel Convention and the elaboration of related Protocols, mechanisms and guidelines to facilitate the implementation of the Convention.

PROPOSED PROGRAMME AREAS

5. The following major programmes are proposed as options to the Preparatory Committee:

A Promote waste prevention and minimization through "cleaner production" methods, through resource recovery, recycling, reclamation, direct re-use or alternative uses of wastes

B Enhance knowledge and information on economics of hazardous waste management

C Increase knowledge about environmental and health impacts of hazardous wastes

D Promote institutional capacities in hazardous waste management

E Strengthen international cooperation in monitoring transboundary movements of hazardous waste in particular the prevention of illegal traffic, and assessing environmental and health impacts of those movements.

A. PROMOTE WASTE PREVENTION AND MINIMIZATION THROUGH "CLEANER PRODUCTION" METHODS

Basis for action

6. Human health and environmental quality are being continually degraded by the increasing amount of waste being produced. One of the first priorities in waste management therefore is minimization as part of a broader approach, including pollution prevention and cleaner production strategies, industrial processes and consumer patterns.

7. Among the most important factors in these strategies is the recovery of wastes into useful material. Technology application, modification and development of new low waste technologies is therefore currently a central focus of waste minimization.

Objectives

8. The objectives of this programme are to:

(a) reduce to the extent feasible the generation of hazardous wastes; and,

(b) Where practicable and environmentally sound, utilize residues emanating from the production process optimizing use of raw materials.

9. The targets are:

(a) Integration of cleaner production approach and waste minimization in all planning, and adoption of specific quantitative targets by a target year;

(b) Establish an intermediate target for each country for the stabilization of the quantity of hazardous waste generated; and,

(c) Establish longer term targets for reducing the amount of hazardous waste produced per unit of manufacture.

Activities

10. Promote information collection and dissemination

- Governments, assisted by international organizations, could establish mechanisms for assessing the value of existing information systems.

- Governments could establish nationwide and regional information collection and dissemination clearinghouses and networks which are easy to access and use for Government institutions and industry.

- International organizations, especially through the UNEP Cleaner Production Programme and the ICPIC system, could extend and strengthen existing systems for collection of cleaner production information.

- Promote the use and dissemination by all United Nations agencies of information collected through the Cleaner Production network.

11. Technology development and research

- Government, academia and industry could significantly increase financial support for "cleaner technology R & D programmes", including the use of biotechnologies.

- Industry, with assistance from National Governments and international organizations, could promote research into the phase-out of hazardous processes and the reduction of raw materials and energy consumption.

- Industry could develop schemes to integrate the cleaner production approach into the design of products.

12. Development of management tools and practices

- Governments could modify existing standards or specifications for purchases to encourage energy and raw materials savings and to avoid discrimination against recycled materials.

- Governments could provide economic or regulatory incentives to stimulate industrial innovation and to encourage waste minimization investments.

- Industrial country Governments could provide a range of incentives including patent buying schemes to encourage industry to transfer technologies and know-how to developing countries. Industry could develop guidelines and codes of conducts leading to cleaner production through sectoral trade industry associations.

13. Promotion of education, training and public awareness

- Governments could increase support for industrial training programmes, incorporating waste minimization techniques and launching of demonstration projects at the local level to develop 'success stories' in cleaner production.

- Industry could integrate cleaner production principles and case examples into training programmes and establish demonstration projects/networks by sector/country.

- Non-governmental organizations and women's groups could develop cleaner production awareness campaigns and promote dialogue and partnership with industry and other actors.

14. Strengthening of institutional capacities including policies and planning

- Governments could incorporate into national planning and legislation an integrated approach to environmental protection driven by prevention and source reduction criteria and adopt waste reduction targets.

- Governments could work with industry on sector-by-sector waste minimization campaigns, including quantified targets for raw material and energy use, as well as the reduction of wastes and other emissions.

- Strengthen rational environmental impact assessment procedures to take into account the concept of "cradle to grave" approach for the management of hazardous wastes, to identify options for minimizing the generation of hazardous wastes, through safer, handling storage, disposal and destruction.

- Governments in collaboration with industry and appropriate international organizations could develop procedures for the monitoring of the application of the "cradle to grave" approach.

- Bilateral and multilateral development assistance agencies could substantially increase funding for cleaner technology transfer to developing countries including small- to medium-size enterprises.

B. ENHANCE KNOWLEDGE AND INFORMATION ON ECONOMICS OF HAZARDOUS WASTE MANAGEMENT

Basis for action

15. Due to the increasing amounts of hazardous wastes generated every year, there are increasing direct and indirect costs to the society and to the individual citizens in connection with its generation, handling and disposal. To improve knowledge of the economics, including impact on employment and environmental benefits of hazardous waste management, is therefore crucial that necessary capital investment be made available in development programmes.

Objectives

16. Harmonized international procedures for estimating the economics of hazardous waste management, taking into consideration the state of development of each country.

Activities

17. Develop and implement a programme aiming at increasing knowledge and information on the economics of waste management

- A relevant and competent international organization could take the lead, in cooperation with other organizations, in inter alia:

  (a) Developing guidelines for estimating the costs and benefits for various approaches to waste minimization and environmentally sound management of wastes.

  (b) Undertaking a comprehensive survey of and disseminate information on, experiences at national level in adopting economic regulatory schemes and incentive mechanisms for waste management.

C. INCREASE KNOWLEDGE ABOUT ENVIRONMENTAL AND HEALTH IMPACTS OF HAZARDOUS WASTES

Basis for action

18. Toxic substances have entered the environment endangering human health and threatening ecosystems, due to careless handling and disposal of hazardous wastes to address these problems, there is a need for increased knowledge on environmental contamination and pollution, the associated exposures of populations, especially women and children and ecosystems, due to hazardous waste, the assessment of risks and the intrinsic properties of wastes.

Objectives

19. The objectives are to:

(a) facilitate the assessment of impacts and risks of hazardous wastes on human health and the environment by establishing appropriate procedures, methodologies, criteria and/or standards;

(b) improve the knowledge regarding effects of hazardous wastes on health and the environment; and,

(c) make information available to governments and to the general public on the effects of hazardous waste on health and the environment.

Activities

20. Development of technologies for handling of hazardous wastes

- International organizations could identify relevant and improved technologies for handling, storage, treatment and disposal of hazardous wastes, and existing ones.

- International organizations could develop improved health-based criteria upon which regulations and standards can be established, and assist in the preparation of practical technical guidelines for safe handling and disposal of hazardous wastes.

21. Development of management tools and practices

- Governments could establish and maintain inventories of hazardous wastes and their treatment/disposal sites.

- Governments and international organizations could collaborate in developing easy to implement methods for characterization of hazardous wastes.

22. Information exchange and dissemination

- International organizations could facilitate and expand the dissemination of technical and scientific information dealing with the various health aspects of hazardous wastes, and to promote its application.

23. Promotion of education and training

- Governments and international organizations could collaborate in developing and disseminating educational materials concerning waste and their effects on environment and health for use in schools and by the general public.

- Governments could establish or strengthen programmes for environmentally sound management of hazardous wastes in accordance with health and environmental standards and extend surveillance systems to identify adverse effects on populations and the environment of exposure to hazardous wastes.

- International organizations could provide assistance to Member States for assessing the health and environmental risks, resulting from exposure to hazardous wastes and in identifying their priorities for controlling the various categories or classes of wastes.

D. PROMOTE INSTITUTIONAL CAPACITIES IN HAZARDOUS WASTE MANAGEMENT

Basis for action

24. Many countries lack the national capacity to handle and manage hazardous waste. This is primarily due to inadequate infrastructure, deficiencies in regulatory frameworks, insufficient training and education programmes and lack of coordination between the different ministries and institutions involved in various aspects of waste management. To ensure environmentally sound management of hazardous wastes one of the main priorities is to provide awareness, education and training programme to cover all levels of the society. In addition there is a need to undertake research programmes to understand the nature of hazardous materials, to identify their potential environmental effects and to develop technologies to safely handle these materials. Finally there is a need to strengthen the capacities of institutions which are responsible for the management of hazardous materials.

Objectives

25. Adoption of appropriate coordinating, legislative and regulatory measures at the national level supporting the environmentally sound management of hazardous waste including for the implementation of international conventions.

26. Public awareness and information programmes on hazardous waste issues and basic education and training programmes provided for industry and government workers in all countries.

27. Comprehensive research programmes on hazardous materials to be established in countries.

28. Strengthened service industries for handling hazardous materials and strengthened international networking.

29. Endogenous capacities to be established in all developing countries to train and educate staff at all levels in hazardous waste handling, monitoring and environmentally sound management.

Activities

30. Strengthening of research

- International organizations and donors could increase support for hazardous waste research management in developing countries.

- Governments, in collaboration with international organizations, could conduct research on the health effects of hazardous wastes in developing countries conditions including the long-term effects on children and women.

- Governments could conduct research aimed at the needs of small- and medium-sized industries.

- Industry, governments and international organizations could expand technological research on hazardous wastes handling, storage, transport, treatment and disposal and hazardous wastes assessment and management.

31. Strengthening of institutional capacities and infrastructures

Governments, international organizations and industry could as appropriate:

- Support national institutions for dealing with hazardous wastes from the regulatory monitoring and enforcement perspectives, including enabling them to implement international conventions.

- Develop industry-based institutions for dealing with hazardous wastes and service industries for handling hazardous wastes.

- Adopt technical guidelines for the environmentally sound management of hazardous wastes and support implementation of regional and international conventions.

- Develop and expand international networking, between professionals working in the hazardous wastes area and maintain an information flow among countries.

- Assess the feasibility of establishing and operating national, subregional and regional hazardous waste treatment centres. Such centres could also be used for education and training as well as to facilitate and promote the transfer of technologies for the environmentally sound management of hazardous wastes.

- Develop a programme for the establishment of national capacities to train and educate staff at various levels in hazardous waste management.

- Study the feasibility of establishing a revolving fund to assist, on an interim basis, in case of an emergency situation in minimizing damage from accidents arising from transboundary movements of hazardous wastes or during the disposal of these wastes.

32. Promotion of education, training and public awareness

Governments and international organizations and industry could:

- Increase public awareness and information on hazardous waste issues and promote the development and dissemination of public information on hazardous waste that is understandable to the general public.

- Develop training and education programmes for men and women in industry and government aimed at specific real-life problems, for example, planning and implementing waste minimization programmes, conducting hazardous materials audits or establishing appropriate regulatory programmes.

- Promote the transfer to developing countries of technologies on hazardous waste minimizing and handling through training for labour, industrial management, and government regulatory staff.

E. STRENGTHENING INTERNATIONAL CO-OPERATION IN MONITORING TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTE

Basis for action

33. To strengthen international cooperation in the monitoring of transboundary movements of hazardous wastes there is a need for harmonization of procedures and criteria used in various international and legal instruments. In this connection there is also a need to develop or harmonize existing criteria for identification of hazardous wastes dangerous to the environment and building monitoring capacities.

Objectives

34. To facilitate and strengthen international cooperation in the monitoring of transboundary movements of hazardous wastes by having internationally adopted criteria for identification and classification of hazardous wastes for the harmonization of relevant international legal instruments.

Activities

35. Harmonization of criteria and regulations

Governments and international organizations could cooperate as appropriate to:

- Incorporate the notification procedure called for in the Basel Convention as well as its Annexes I, II and III into national legislation.

- Cooperate in the formulation of regional agreements regulating transboundary movements of hazardous wastes such as the recently adopted Bamako Convention.

- Help promote the compatibility of such regional agreements with international conventions and protocols.

- Strengthen regional organizations capacities and capabilities to monitor transboundary movement of hazardous wastes.

- To set up monitoring and surveillance systems for the transboundary movements of hazardous wastes.

- Develop guidelines for the identification of hazardous wastes at the national level taking into account internationally agreed criteria and prepare a list of hazard profiles for the hazardous wastes listed in the national legislation.

- Develop and use appropriate methods for testing the hazardous wastes and adopt or adapt safety standards and principles for managing hazardous wastes in an environmentally sound way.

36. Adoption of normative measures

Governments and international organizations could collaborate to:

- Elaborate or adapt policies for the environmentally sound management of hazardous wastes in conformity with existing international instruments.

- Set up or adapt norms and regulatory measures to comply with the obligations and principles of the Basel Convention, the Bamako Convention or other future regional and international agreements including protocols for setting out appropriate rules and procedures in the field of liability and compensation for damage resulting from the transboundary movement and disposal of hazardous wastes and other wastes.

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ENVIRONMENTALLY SOUND MANAGEMENT OF SOLID WASTES AND SEWAGE-RELATED ISSUES: OPTIONS FOR AGENDA 21

Report of the Secretary-General of the Conference

INTRODUCTION

1. This paper was prepared by the secretariat in response to decision 2/16 of the Preparatory Committee at its second session, in which the Secretary General of the Conference was requested"... to elaborate for its third session the potential areas for action... which would form the framework of an international strategy for the environmentally sound management of solid wastes and sewage". This work should also take into account decision 1/22 of the Preparatory Committee at its first substantive session.

2. In preparing this report, and the corresponding background document (A/CONF.151/PC/76), the UNCED secretariat was assisted by the United Nations system of organizations and specialized agencies whose helpful and constructive support has made an indispensable contribution to this report. The report, in particular, reflects extensive inputs from the United Nations Centre for Human Settlements (Habitat), the World Health Organization and the World Bank. Non-governmental organizations, in particular, the International Solid Waste Association, academic and research institutions also provided especially helpful contributions towards the preparation of the report.

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3. In pursuing the decision of the Preparatory Committee, the UNCED secretariat has identified a number of options for action which could be used as a basis for a contribution to Agenda 21. The options for action focus on those areas which respond to the needs identified in the Background Document (A/CONF.151/PC/76). In defining the principal programme areas the report recognizes that environmentally-sound waste management must go beyond simply disposing of, safely, the wastes that are generated and seek to address the root cause of the problem by attempting to change unsustainable patterns of production and consumption. Defined thus, the options for action under the programme on environmentally sound management of solid wastes and sewage present a unique opportunity to reconcile development with environmental protection.

4. Correspondingly the framework of the options for action is founded on a hierarchy of objectives: first, minimize waste generation; second, recycle to the extent possible the wastes that cannot be avoided; and third, dispose in an environmentally-safe way of the non-recyclable fraction of unavoidable wastes. While a programme based on such a hierarchy of objectives would be responsive to the waste management requirements of those with access to a suitable service, special attention is still required to extend services to unserved critical urban poor populations. Such a four-goaled programme constitutes a comprehensive and environmentally-responsive framework for managing wastes in the future.

5. It is recognized that some of these goals cannot be accomplished immediately in either industrialized or developing countries. Changing production and consumption patterns which must characterize improvements in waste management in industrialized countries require public support and incentives to manufacturers and can take considerable time to put into effect. Current consumption levels in developing countries are low and substantial increases will be inevitable as these countries attain basic standards of economic welfare. The instilling of sound waste management policies and approaches now could help ensure a sustainable development process for the future. In addition, some improvement in both the quality of service and environmental protection achieved by present day waste disposal practises is required for most developing countries. For the, poor who already minimize and reuse much of their wastes the priority is often to have access to basic waste disposal systems.

SECTOR-WIDE OBJECTIVES FOR WASTES

6. Following are the overall sector-wide objectives:

(a) Stabilize waste production

(b) Ensure that the living and working environment of all people is isolated from all forms of waste

(c) Ensure that waste-related surface and ground water pollution is eliminated

(d) Ensure that all wastes are safely reutilized.

PROPOSED PROGRAMME AREAS

7. The following four major waste-related programme areas are proposed as options for consideration by the Preparatory Committee:

MINIMIZING WASTES
MAXIMIZING WASTE REUSE
PROMOTING SAFE WASTE DISPOSAL
EXTENDING WASTE DISPOSAL SERVICE COVERAGE.

8. The above programmes are not in any order of priority, which will vary from one country to the next. In fact, for many developing countries the programme to improve and extend waste disposal service coverage will remain the first priority for many years to come. The four programme areas together will help in the achievement of sector-wide goals for wastes in a comprehensive manner. Within each programme area, a number of actions will need to be undertaken and should seek to build upon current activities and programmes at the global, regional, national and local levels and to address the many gaps identified in the background paper.

A. MINIMIZING WASTES

Basis for action

9. Unsustainable patterns of production and consumption are increasing the quantities and variety of environmentally persistent wastes at unprecedented rates. The trend could double the quantities of wastes produced by the end of the century and increase quantities by between four and five fold by the year 2025. A preventive waste management approach focused on changes in life-styles and in production and consumption patterns offers the best chance for reversing current trends.

Objectives

10. Countries, assisted by international organizations, could stabilize their waste production over an acceptable time frame.

11. Countries, assisted by international organizations, could strengthen procedures for assessing waste quantity and composition changes and for making waste minimization policies operational.

12. Some targets of the programme could include:

(a) By [2000] ensure sufficient national, regional and international capacity to access, process and monitor waste trend information and implement waste minimization policies.

(b) By [2000] all industrialized countries and by [2020] all developing countries stabilize per capita waste production rates.

(c) By [2025] produce annual audits with full global coverage.

Activities

13. Monitoring is a key prerequisite for keeping track of changes in waste quantity and quality and their resultant impact on the environment. The following specific activities could be undertaken to support monitoring:

(a) Relevant United Nations bodies coordinate the development of methodologies for country-level waste monitoring and use and expand existing monitoring mechanisms such as UNEP's Global Environmental Monitoring System (GEMS); WHO's Drinking Water Supply and Sanitation Coverage Data and Global Epidemiological Statistics; and UNCHS (Habitat)'s Human Settlements Statistical Data Base (HSDB.stat) programme for developing a harmonized data collection system.

(b) Countries, assisted by international organizations and bilateral agencies, identify and strengthen local institutions for gathering the requisite data.

(c) The relevant United Nations bodies undertake to process the data and report systematically to an appropriate United Nations forum.

(d) Countries use the data to assess how environmentally responsive their waste policies are and for their national planning and budgeting.

14. Instruments for waste minimization will need to be identified and widely disseminated. These could include:

(a) International organizations could undertake an extensive review of the effectiveness of all waste minimization instruments, and identify potential new instruments that could be used and techniques by which they could be made operational at the country level. Guidelines and codes of practice could be developed.

(b) Countries could make waste prevention and minimization the principal objective of their waste management programmes.

(c) Countries could provide and test a range of incentives to encourage industry to change product design and reduce industrial process wastes.

(d) NGOs and consumer groups could sensitize consumers to purchase environmentally benign products and thereby develop selective purchasing by informed buyers.

(e) Countries could implement demonstration and pilot programmes to optimize waste minimization instruments.

15. Education, Information and Research aimed at promoting waste minimization are crucial for obtaining citizen and industry support.

(a) Educational establishments could include within school curricula principles and practices of preventing and minimizing wastes and the environmental impacts of waste.

(b) Countries together with NGOs could mount public awareness campaigns to reduce wastes.

(c) International organizations could develop media packages for adaptation and use in local campaigns.

(d) Countries could increase funds for applied research on waste minimization and provide an enabling framework for households and industry to do likewise.

(e) International organizations could establish a clearing house with extensive networking for information exchange on waste minimization.

16. Capacity building will be crucial to allow countries, especially developing countries, to develop and implement waste minimization at the local and national levels. Some of the activities that could be undertaken are:

(a) The relevant United Nations bodies and international donors, in cooperation with governments and NGOs, could provide substantially increased technical and financial assistance to build up technical, managerial, planning, monitoring and administrative capacities to implement waste prevention and minimization as the priority objective of overall waste management programmes.

(b) Countries could facilitate transfer of waste reduction technologies to industry, and establish quantitative targets for effluents and solid wastes and for raw material use and energy consumption.

B. MAXIMIZING WASTE REUSE

Basis for action

17. The exhaustion of traditional disposal sites, stricter environmental controls governing waste disposal, and increasing quantities of more persistent wastes have all contributed to a rapid increase in the cost of waste disposal services. Costs could double or triple by the end of the decade. Current disposal practices pose a threat to the environment. As the economics of waste disposal services change, waste recycling and resource recovery are becoming increasingly cost-effective. Future waste management programmes should take maximum advantage of resource-efficient approaches to management.

Objectives

18. Countries, assisted by international organizations, could recycle an increasing proportion of the generated wastes with time.

19. Countries and international organizations could ensure the availability of information techniques and appropriate policy instruments to encourage and make operational waste recycling schemes.

20. Some targets of the programme could include:

(a) By [2000] ensure sufficient national, regional and international capacity to implement waste recycling policies and actions.

(b) By [2010] all countries to recycle a third of the total wastes generated.

(c) By [2025] all countries to recycle no less than a half of the total wastes generated.

Activities

21. Information and research is required to identify promising socially-acceptable and cost-effective forms of waste recycling relevant to each country. For example, supporting activities could include:

(a) International and regional organizations could undertake an extensive review of options and techniques for recycling all forms of wastes. Policies for recycling could be made an integral component of national and local waste management programmes.

(b) Countries, assisted by international donors, could assess the extent and practice of waste recycling operations currently undertaken and identify ways by which these could be intensified and supported.

(c) Countries, assisted by international donors, could increase funding for applied research pilot programmes to test out various options for recycling, including the use of small, cottage-based recycling industries; compost production; treated wastewater irrigation; and energy recovery from wastes.

(d) International and regional organizations could produce guidelines and best practices for waste recycling.

(e) Relevant United Nations bodies, in cooperation with governments and NGOs, could intensify efforts at collecting, analyzing and disseminating to key target groups relevant information on waste issues. Special research grants could be made available on competitive basis for innovative research projects on recycling techniques.

22. Incentives for waste recycling are numerous. Countries could make operational a number of policies which will provide incentives to industry, institutions, commercial establishments and individuals to recycle wastes instead of disposing of them.

(a) Governments could offer prize awards to local and municipal authorities that recycle the maximum proportion of their wastes.

(b) Countries assisted by NGOs could extend soft loans, and provide technical assistance to informal waste recycling operations.

(c) Countries could apply economic and regulatory instruments, including tax incentives to support the principle that generators of wastes pay for their disposal.

(d) Countries could implement specific mechanisms such as deposit/refund systems as incentives for recycling.

23. The Transfer of technologies could support waste recycling and reuse:

(a) The United Nations, inter-governmental organizations, and bilateral and multilateral donors could include the transfer of recycling technologies, such as machinery for reusing plastics, within their technical co-operation and aid programmes.

(b) The United Nations, regional organizations, NGOs and national governments could develop and improve existing technologies, especially indigenous technologies, and facilitate their transfer under on-going regional and inter-regional technical assistance programmes.

(c) National governments could facilitate technology transfer for waste recycling by exempting such technologies from import taxes and other restrictions.

24. Training will be required to reorient present day waste management practices to include waste recycling. The following is an indicative list of actions that might be incorporated:

(a) The United Nations, regional organizations and international donors could include waste recycling in-service programmes as integral components of their technical assistance programmes on waste management, urban management and infrastructure development.

(b) Existing training programmes on water supply and sanitation could be expanded to incorporate techniques and policies for waste recycling.

(c) The advantages and civic obligations associated with waste recycling could be included in school curricula and relevant general educational courses.

(d) NGOs, community-based organizations and public interest groups in collaboration with local municipal authorities could do much to mobilize community support for waste recycling through focused community-level campaigns.

25. Capacity building to support increased waste recycling could focus on the following areas:

(a) Ways by which national governments can make operational national policies and incentives for waste management.

(b) Methods of enabling local and municipal authorities to mobilize community support for waste recycling by involving and assisting the informal sector waste recycling operations and undertaking waste management planning which incorporates resource recovery practices.

(c) Financial and technical assistance will be required for resource recovery infrastructure planning and implementation.

C. PROMOTING SAFE WASTE DISPOSAL

Basis for action

26. Even when wastes are minimized and recycling has been maximized, some wastes will still remain. Even after treatment, all discharges of wastes have some residual impact on the receiving environment. Consequently, there is scope for improving waste treatment and disposal practices such as, for example, avoiding the discharge of sludges at sea. In developing countries the problem is of a more fundamental nature: less than 10 per cent of urban wastes receive any form of treatment and only a small proportion of treatment is in compliance with any acceptable quality standard.

Objectives

27. Countries, assisted by international organizations, could treat and dispose safely an increasing proportion of the generated wastes with time.

28. Some targets of the programme could include:

(a) By [1995] all countries could establish waste treatment and disposal quality criteria based on the nature and assimilative capacity of the receiving environment.

(b) By [2000] countries could establish sufficient capacity to undertake waste-related pollution impact monitoring and conduct regular surveillance.

(c) By [2000] countries could ensure that no sewage sludges are disposed at sea and that at least 50 per cent of all sewage wastewaters and solid wastes are treated or disposed of in conformity with acceptable environmental quality criteria.

(d) By [2025] countries could dispose of all sewage, wastewaters and solid wastes in conformity with internationally agreed and accepted environmental quality criteria.

Activities

29. Standard setting and monitoring are two key elements essential for gaining control over waste-related pollution. The following specific activities are indicative of the kind of supportive actions that could be taken:

(a) Relevant United Nations agencies, in collaboration with international donors and national governments could establish national and, where relevant, local environmental quality standards based on international scientific criteria and guidelines.

(b) Relevant United Nations agencies and bilateral and multilateral donors to assemble and analyze the scientific evidence and association of pollution impacts of wastes in the environment and formulate and disseminate recommended international scientific criteria and guidelines.

(c) Bilateral and multilateral donors and lending institutions could include within their technical assistance programmes and agreements the provision of monitoring equipment and requisite training for their use.

30. Institutional reforms and capacity building will be indispensable if countries are to be able to quantify and mitigate waste-related pollution. Some activities to achieve this objective could include:

(a) Countries that do not have independent environmental control bodies could be encouraged to establish these at national and local levels. International organizations and donors could support needed manpower skill upgrading and provision of equipment.

(b) Countries could empower pollution control agencies with the requisite legal mandate and financial capacities to carry out their duties effectively.

(c) International agencies, local NGOs and formal technical training establishments could provide both formal and in-service training focused on pollution control, waste treatment and disposal technologies, and operations and maintenance of waste-related infrastructure. Inter-country staff exchange programmes could also be established.

(d) Countries, municipalities and local authorities, in collaboration with United Nations agencies, bilateral donors, international organizations and funding agencies could focus, as a first priority, on the rehabilitation and maintenance of existing facilities and concentrate technical assistance on improved maintenance practices and techniques; followed by the planning and construction of waste treatment facilities.

31. Information and research on various aspects of waste-related pollution control will be crucial for achieving the objectives of this programme. Activities in this area could include:

(a) An information clearing house to be established within a relevant United Nations agency with extensive networks at the regional, national and local levels to collect and disseminate information on all aspects of waste management, including safe disposal. Through the clearing house, strengthen existing regional networks and create new ones in regions that don't have them.

(b) Relevant United Nations agencies could prepare guidelines and technical reports on subjects such as the integration of human settlements land use planning with waste disposal; environmental quantity criteria and standards; waste treatment and safe disposal options; industrial waste treatment; and landfill operations.

(c) Research on critical subjects such as low-cost, low-maintenance wastewater treatment systems, safe sludge disposal options, and industrial waste treatment could be supported by the international donor community.

32. In appraising development projects in the fields of water supply and waste collection, the need for investments in waste treatment facilities should be considered.

D. EXTENDING WASTE DISPOSAL SERVICE COVERAGE

Basis for action

33. By the end of the century over 2.0 billion people will be without access to basic sanitation and an estimated half of urban populations in developing countries will be without adequate solid waste disposal services. As many as 5.2 million people, including 4 million children under 5 die each year from waste-related diseases. The health impacts are particularly severe for the urban poor. The health and environmental impacts of inadequate waste management, however, go beyond the unserved settlements themselves and result in water, land and air contamination and pollution over a wider area. Extending and improving waste collection and safe disposal services are crucial to gaining control over this form of pollution.

Objectives

34. The overall objective of this programme is to provide health-protecting, environmentally-safe waste collection and disposal services to all people. Specific supportive targets could be:

(a) By [2000] all countries should have necessary technical, financial and human-resource capacity to ensure the provision of waste services commensurate with needs;

(b) By [2025] all urban populations should be provided adequate waste services;

(c) By [2050] full urban waste service coverage should be maintained and full rural coverage with sanitation achieved.

Activities

35. Other Agenda 21 programme actions would contribute to the provision of waste services. These include:

(a) The Drinking Water Supply and Sanitation; and the Water and Sustainable Urban Development Programme areas of the Agenda 21 proposals on Freshwater Resources (document: A/CONF.151/PC/42/Add.7).

(b) The Environmental Infrastructure; and Human Settlements Management Programme areas of the Agenda 21 proposals on Human Settlements (document: A/CONF.151/PC/56).

(c) "The Basic Health Needs Related to The Environment" programme area of the Agenda 21 proposals on Environmental health aspects of development (document: A/CONF.151/PC/54).

36. Since most of these initiatives will require interventions within the human settlements context, an overall umbrella programme that coordinates and concentrates international efforts within the human settlements programme and leads to action at the national and local levels will prove essential.

The following activities are proposed under this programme area:

37. Policy changes at the national and local levels could enhance the rate of waste service coverage extension. These could include:

(a) The full recognition and use of the range of low-cost options for waste management including where appropriate their institutionalization and incorporation within codes of practice and regulation.

(b) Extension of waste management services to all settlements irrespective of their legal status.

(c) Integration of the provision and maintenance of waste management services with other basic services such as water supply and stormwater drainage.

38. Considerable financial and technical assistance will be required to increase coverage. National governments, in collaboration with the United Nations, international organizations, bilateral donors and multilateral financial institutions could undertake many activities of which the following are a sample:

(a) Adjust priorities within waste management programmes to give higher priority to meeting the waste disposal service needs of the unserved, especially, the unserved urban poor.

(b) Establish financing mechanisms for waste management service development in deprived areas including appropriate modes of revenue generation.

(c) Apply polluter pays principle by setting waste management charges at rates that reflect the true economic costs of providing the service and ensure that those that generate the wastes pay the full cost of disposing of it in an environmentally safe way.

(d) Participatory planning and implementation procedures that involve communities, especially women, could be institutionalized.

(e) Inter-country transfer of relevant technologies, especially technologies for high density settlements, could be encouraged.

39. Information and research activities could be enhanced. Countries, with the assistance of international organizations, bilateral donors and NGOs could, for instance:

(a) Find solutions and equipment for managing wastes in areas of concentrated populations. In particular, there is a need for appropriate refuse storage and collection systems and cost- effective and hygienic human waste disposal options.

(b) Prepare and disseminate guidelines, case studies, policy reviews and technical reports on appropriate solutions and modes of service delivery to unserved low-income areas.

(c) A Settlement Infrastructure and Environment Programme could be launched following the Conference to co-ordinate the activities of all United Nations agencies involved in this area and include a clearing house for information dissemination on all waste management issues.

40. International organizations, bilateral donors, NGOs in collaboration with national and local governments, could provide focused training on low-cost waste disposal options and participatory techniques for their planning and delivery. Inter-country staff exchange programmes among developing countries could form part of such training.

41. Improvements in management techniques are likely to yield the greatest returns in terms of improving waste management service efficiency. The United Nations, international organizations, bilateral donors and multilateral financial institutions could in collaboration with national and local governments develop and make operational management information systems (MIS) for municipal record keeping and accounting and for efficiency and effectiveness assessment.